

Docket No.: YHK-0066

PATENT

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF APPEALS AND INTERFERENCE**

In re Application of

Confirmation No.: 3664

Eun Cheol LEE et al.

Group Art Unit: 2674

Serial No.: 09/879,170

Examiner: Xiao M. Wu

Filed: June 13, 2001

Customer No.: 34610

For: PLASMA DISPLAY AND DRIVING METHOD THEREOF

**APPEAL BRIEF**

U.S. Patent and Trademark Office  
Customer Window, Mail Stop Appeal Brief-Patents  
Randolph Building  
401 Dulany Street  
Alexandria, Virginia 223134

Sir:

This appeal is taken from the rejection of claims 1-4, 6-10, 13-14, and 19-23 as set forth in the Office Action dated March 9, 2006 (hereinafter "the Office Action"). Dependent claims 5 and 11-12 have been indicated as containing allowable subject matter. Independent claim 18 has been indicated as allowed. In accordance with 37 C.F.R. §41.37, Applicants address the following items.

**REAL PARTY IN INTEREST**

The real party in interest is the assignee, LG Electronics Inc. The assignment document is recorded at Reel 011903 and Frame 0344.

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**RELATED APPEALS AND INTERFERENCES**

There are no related appeals and interferences.

**STATUS OF THE CLAIMS**

This is an appeal from the rejection dated March 9, 2006 of claims 1-4, 6-10, 13-14, and 19-23. Dependent claims 5 and 11-12 have been indicated as containing allowable subject matter. Independent claim 18 has been indicated as allowed.

**STATUS OF AMENDMENTS**

All Amendments filed in this application have/have not been entered. A copy of appealed claims 1-4, 6-10, 13-14, and 19-23, as well as objected to dependent claims 5, 11-12, and allowed independent claim 18, appears in the attached Claims Appendix.

**SUMMARY OF THE CLAIMED SUBJECT MATTER**

As stated in 37 C.F.R §41.37(c)(v), Applicants are providing the following explanation of each of independent claims 1, 13, 14, and 19-20 involved in this appeal, as well as dependent claims 3-4, 7, 10, and 23. Dependent claims 5 and 11-12 have been indicated as containing allowable subject matter. Independent claim 18 has been indicated as allowed. This explanation refers to the specification and drawings. The following is merely an example summary and is not

intended to be a discussion of the full and entire scope of the claims. Other interpretations, configurations, and embodiments are also within the scope of the pending claims.

### **Independent Claim 1**

Independent claim 1 recites a plasma display panel (see, e.g., Figure 6), comprising an address electrode (X5) included in each discharge cell (50) making a unit pixel of the plasma display panel, a plurality of second sustain electrodes (ZB1/Z1 and ZB1'/Z1') positioned at each periphery (upper and lower periphery) of the discharge cell (50) in a direction crossing the address electrode (X5) to receive a second sustaining pulse, and at least one of first sustain electrodes (Y1/YB1) positioned at the center of the discharge cell (50) in a direction crossing the address electrode to receive a first sustaining pulse applied alternately with respect to the second sustaining pulse, wherein the plurality of second sustain electrodes (ZB1/Z1 and ZB1'/Z1') is unique to each of the discharge cells (50) associated with the address electrode (X5). See, for example, Fig. 6 and the corresponding disclosure. The reference numerals are intended to be illustrative only and are not intended to limit the scope since independent claim 1 broadly recites the features of embodiment(s) disclosed in the application.

### **Dependent Claim 3**

Dependent claim 3 recites that the plasma display device further comprises a bus electrode (VB1) arranged in parallel to the first sustain electrode (Y1/YB1) at the center of the

first sustain electrode. See, for example, Figs. 6 and 9 and the corresponding disclosure. The reference numerals are intended to be illustrative only and are not intended to limit the scope since dependent claim 3 broadly recites the features of embodiment(s) disclosed in the application.

#### **Dependent Claim 4**

Dependent claim 4 recites that the plasma display device further comprises bus electrodes (VB1) arranged in parallel to the first sustain electrode (Y1/YB1) at each edge of the first sustain electrode. See, for example, Fig. 11 and the corresponding disclosure. The reference numerals are intended to be illustrative only and are not intended to limit the scope since dependent claim 4 broadly recites the features of embodiment(s) disclosed in the application.

#### **Dependent Claim 7**

Dependent claim 7 recites that the plasma display device further comprises a second barrier rib (58) formed in a direction crossing the first barrier rib 50. See, for example, Fig. 10 and the corresponding disclosure. The reference numerals are intended to be illustrative only and are not intended to limit the scope since dependent claim 7 broadly recites the features of embodiment(s) disclosed in the application.

**Dependent Claim 10**

Dependent claim 10 recites that the plasma display device further comprises a scan/sustain driver 60 connected to the second sustain electrode (Y1/YB1 and Y1'/YB1') to apply the scanning pulse and the second sustaining pulse, and a common sustaining driver 62 connected to the first sustain electrode (Z1/ZB1 and Z1'/ZB1') to apply a reset pulse and the first sustaining pulse. See, for example, Figure 14 and the corresponding disclosure. The reference numerals are intended to be illustrative only and are not intended to limit the scope since dependent claim 10 broadly recites the features of embodiment(s) disclosed in the application.

**Independent Claim 13**

Independent claim 13 recites a method of driving a plasma display panel (see, e.g., Figure 6) including a plurality of second sustain electrodes (ZB1/Z1 and ZB1'/Z1') positioned at each periphery (upper and lower periphery) of a discharge cell (50), an address electrode (X5) arranged in a direction crossing the second sustain electrodes (ZB1/Z1 and ZB1'/Z1'), and at least one of first sustain electrode (Y1/YB1) formed in parallel to the second sustain electrodes (ZB1/Z1 and ZB1'/Z1') between the second sustain electrodes, said method comprising the steps of: applying a reset pulse to at least one electrode of the first sustain electrode and the second sustain electrodes so as to initialize the discharge cell, wherein the plurality of second sustain electrode is unique to each of the discharge cells associated with the address electrode,

applying a scanning pulse to the first sustain electrode so as to select the discharge cells to be turned on, applying a data pulse synchronized with the scanning pulse to the address electrode, and alternately applying the sustaining pulse to the first and second sustain electrodes so as to discharge the discharge cells to be turned on. See, for example, Fig. 6 and the corresponding disclosure. The reference numerals are intended to be illustrative only and are not intended to limit the scope since independent claim 13 broadly recites the features of embodiment(s) disclosed in the application.

#### **Independent Claim 14**

Independent claim 14 recites a method of driving a plasma display panel (see, e.g., Figure 6) including a plurality of second sustain electrodes (ZB1/Z1 and ZB1'/Z1') positioned at each periphery (upper and lower periphery) of a discharge cell (50), an address electrode (X5) arranged in a direction crossing the second sustain electrodes (ZB1/Z1 and ZB1'/Z1'), and at least one of first sustain electrode (Y1/YB1) formed in parallel to the second sustain electrodes (ZB1/Z1 and ZB1'/Z1') between the second sustain electrodes, said method comprising the steps of: applying a reset pulse to at least one electrode of the first sustain electrode so as to initialize the discharge cell, applying a scanning pulse to the second sustain electrodes so as to select the discharge cells to be turned on, wherein the plurality of second sustain electrode is unique to each of the discharge cells associated with the address electrode, applying a data pulse synchronized with the scanning pulse to the address electrode, and alternately applying the

sustaining pulse to the first and second sustain electrodes so as to discharge the discharge cells to be turned on. See, for example, Fig. 6 and the corresponding disclosure. The reference numerals are intended to be illustrative only and are not intended to limit the scope since independent claim 14 broadly recites the features of embodiment(s) disclosed in the application.

### **Independent Claim 19**

Independent claim 19 recites a plasma display panel (see, e.g., Figure 6), comprising an address electrode (X5) included in each discharge cell (50) making a unit pixel of the plasma display panel, a plurality of second sustain electrodes (Y1/YB1 and Y1'/YB1') positioned at each periphery (upper and lower periphery) of the discharge cell (50) in a direction crossing the address electrode (X5) to receive a second sustaining pulse, at least one of first sustain electrodes (ZB1/Z1 and ZB1'/Z1') positioned at the center of the discharge cell (50) in a direction crossing the address electrode (X5) to receive a first sustaining pulse applied alternately with respect to the second sustaining pulse, a scan/sustain driver (54) connected to the second sustain electrode (Y1/YB1 and Y1'/YB1') to apply the scanning pulse and the second sustaining pulse, and a common sustaining driver (56) connected to the first sustain electrode (ZB1/Z1 and ZB1'/Z1') to apply a reset pulse and the first sustaining pulse. See, for example, Fig. 6 and the corresponding disclosure. The reference numerals are intended to be illustrative only and are not intended to limit the scope since independent claim 19 broadly recites the features of embodiment(s) disclosed in the application.

**Independent Claim 20**

Independent claim 20 recites a display panel (see, e.g., Figure 6), comprising a plurality of first sustain electrodes (Y1/YB1) in a first direction, a plurality of second sustain electrodes (ZB1/Z1 and ZB1'/Z1') in the first direction, and a plurality of address electrodes (e.g., X5) in a second direction, which is different from the first direction such that the plurality of first and second sustain electrodes cross with the plurality of address electrodes, wherein there are at least more than two second sustain electrodes (ZB1/Z1 and ZB1'/Z1') than the first sustain electrode (Y1/YB1), wherein a plurality of discharge cells (e.g., 50) are associated with each of the plurality of address electrodes, and the plurality of second sustain electrodes (ZB1/Z1 and ZB1'/Z1') is unique to each of the plurality of address electrodes for each discharge cell (50). See, for example, Fig. 6 and the corresponding disclosure. The reference numerals are intended to be illustrative only and are not intended to limit the scope since independent claim 20 broadly recites the features of embodiment(s) disclosed in the application.

**Dependent Claim 23**

Dependent claim 23 recites that there are twice as many second sustain electrodes (ZB1/Z1 and ZB1'/Z1') than the first sustain electrodes (Y1/YB1). See, for example, Fig. 6 and the corresponding disclosure. The reference numerals are intended to be illustrative only and are not intended to limit the scope since dependent claim 23 broadly recites the features of embodiment(s) disclosed in the application.



**GROUND OF REJECTION TO BE REVIEWED ON APPEAL**

The rejection of claims 1-4, 6-10, 13-14, and 19-23 under 35 U.S.C. § 103(a) as being unpatentable over Kanazawa et al. (hereinafter “Kanazawa”), U.S. Patent No. 6,288,692, in view of Masumori et al. (hereinafter “Masumori”), U.S. Patent No. 5,168,270.

**ARGUMENT****Independent Claim 1**

It is respectfully submitted that it is technically incorrect to consider the odd cell 55 and the even cell 56 disclosed by Kanazawa as sub-cells. Each of the odd and even cells 55, 66 are discharge cells that have only a single X electrode and share a Y electrode.

More particularly, Kanazawa at least fails to disclose or suggest a plasma display panel, comprising a plurality of second sustain electrodes positioned at each periphery of the discharge cell in a direction crossing the address electrode to receive a second sustaining pulse, as recited in independent claim 1.

That is, Kanazawa discloses alternatively driving an odd discharge cell 55 during an odd field and an even discharge cell 56 during an even field. Each of the odd discharge cells 55 is formed at an intersection of a wide y electrode 51, an x odd electrode 52o, and an address electrode 53. Each of the even discharge cells 56 is formed at an intersection of a wide y electrode 51, an x even electrode 52e, and an address electrode 53 (see, for example, Fig. 13 and the corresponding disclosure of Kanazawa). Thus, Kanazawa discloses that there are odd discharge cells 55 and separate even discharge cells 56. Within each discharge cell 55, 56,

whether it be even or odd, there is only a single, corresponding second sustain electrode. For the odd discharge cell 55, there is the x odd electrode 52o. For the even discharge cell 56, there is the x even discharge cell 52e (see, for example, the Abstract of Kanazawa at lines 12-16).

Further, Fig. 16 of Kanazawa discloses separately driving each odd and even cells. For example, during an odd field, a sustaining discharge pulse is applied alternately to the y electrode 51 and only the odd x electrode (Xo) 52o, while a constant intermediate voltage  $V_m$  of the discharge pulses is applied to the even x electrode 52e. Then, during an even field, as shown in Fig. 17, the sustaining discharge pulse is applied alternatively to the y electrode 51 and only the even x electrode (Xe) 52e, while a constant voltage  $V_m$  is applied to the odd x electrode (Xo) 52o. Kanazawa discloses that the separate voltage application to the odd x and the even x electrodes prevent incorrect discharge in the second cell (see, for example, col. 11, lines 14-20 of Kanazawa). Consequently, each of the even cells 55 and odd cells 56 are separate cells each having only one second sustain electrode and receiving a different sustaining discharge pulse.

Thus, Kanazawa does not disclose or suggest all of the features of independent claim 1, or the claimed combination. Masumori fails to overcome the deficiencies of Kanazawa, as it is merely cited for allegedly teaching driving two rows simultaneously.

### **Dependent Claim 3**

Dependent claim 3 recites that the plasma display device further comprises a bus electrode arranged in parallel to the first sustain electrode at the center of the first sustain

electrode. In the Examiner's rejection, he refers to Fig. 8 of Kanazawa as disclosing the features of claim 3. However, Fig. 8 of Kanazawa shows "a sectional view of a panel in the known display shown in Fig. 7." See col. 5, lines 27-28 of Kanazawa. Further, Fig. 7 shows pairs of X and Y sustaining electrodes which form individual cells. In Fig. 8, the "glow discharge" indicates the discharge created by the cell formed by X1 and Y1 electrodes, as well as a corresponding address electrode. Kanazawa does not disclose or suggest, in combination with the other claimed features, a bus electrode arranged in parallel to the first sustain electrode at the center of the first sustain electrode. Accordingly, Kanazawa does not disclose or suggest all of the features of dependent claim 3, or the claimed combination. Masumori fails to overcome the deficiencies of Kanazawa, as it is merely cited for allegedly teaching driving two rows simultaneously.

#### **Dependent Claim 4**

Dependent claim 4 recites that the plasma display device further comprises bus electrodes arranged in parallel to the first sustain electrode at each edge of the first sustain electrode. Fig. 2 of Kanazawa, referred to by the Examiner in his rejection, discloses a "view of the known triple-electrode surface discharge AC type PDP." See col. 5, lines 18-19 of Kanazawa. Each cell contains a first and second (X and Y) pair of electrodes 11 and 12, which create a discharge, along with an address (third) electrode 28. Kanazawa does not disclose or suggest, in combination with the other claimed features, bus electrodes arranged in parallel to the first sustain electrode at each edge of the first sustain electrode. Accordingly, Kanazawa does not

disclose or suggest all of the features of dependent claim 4, or the claimed combination. Masumori fails to overcome the deficiencies of Kanazawa, as it is merely cited for allegedly teaching driving two rows simultaneously.

### **Dependent Claim 7**

Dependent claim 7 recites that the plasma display device further comprises a second barrier rib formed in a direction crossing the first barrier rib. Fig. 3 of Kanazawa, referred to by the Examiner in his rejection, discloses only one barrier rib 14 formed between each pair of addressing electrode 13, again with reference to the prior art. See col. 5, lines 14-15 and col. 6, lines 21-22. Further, Fig. 10, also referred to by the Examiner, merely discloses a light-interceptive member 132 “placed in a slit between each Y electrode and X electrode on different lines which is not a display slit.” Kanazawa teaches that the light-interceptive member 132 “helps minimize light reflected from slits that are not display slits.” See col. 8, lines 19-23 of Kanazawa. Kanazawa does not disclose or suggest, in combination with the other claimed features, a second barrier rib formed in a direction crossing the first barrier rib. Accordingly, Kanazawa does not disclose or suggest all of the features of dependent claim 7, or the claimed combination. Masumori fails to overcome the deficiencies of Kanazawa, as it is merely cited for allegedly teaching driving two rows simultaneously.

**Dependent Claim 10**

Dependent claim 10 recites that the plasma display device further comprises a scan/sustain driver connected to the second sustain electrode to apply the scanning pulse and the second sustaining pulse, and a common sustaining driver connected to the first sustain electrode to apply a reset pulse and the first sustaining pulse. Kanazawa does not disclose or suggest such features.

Accordingly, Kanazawa does not disclose or suggest all of the features of dependent claim 10, or the claimed combination. Masumori fails to overcome the deficiencies of Kanazawa, as it is merely cited for allegedly teaching driving two rows simultaneously.

**Independent Claim 13**

Kanazawa at least fails to disclose or suggest a method of driving a plasma display panel including a plurality of second sustain electrodes at each periphery of a discharge cell, comprising alternatively applying the sustaining pulse to the first and second sustaining electrodes so as to discharge the discharge cells to be turned on, as recited in independent claim 13. As set forth above, it is technically incorrect to consider the odd cell 55 and the even cell 56 disclosed by Kanazawa as sub-cells. Each of the odd and even cells 55, 66 are discharge cells that have only a single X electrode and share a Y electrode. Further, as discussed above, Kanazawa discloses alternatively driving an odd discharge cell 55 during an odd field and an even discharge cell 56 during an even field, and separately driving each odd and even cells. Thus, each of the even cells

55 and odd cells 56 are separate cells each having only one second sustain electrode and receiving a different sustaining discharge pulse.

Accordingly, Kanazawa does not disclose or suggest all of the features of independent claim 13, or the claimed combination. Masumori fails to overcome the deficiencies of Kanazawa, as it is merely cited for allegedly teaching driving two rows simultaneously.

#### **Independent Claim 14**

Kanazawa at least fails to disclose or suggest a method of driving a plasma display panel including a plurality of second sustain electrodes at each periphery of a discharge cell, comprising alternatively applying the sustaining pulse to the first and second sustaining electrodes so as to discharge the discharge cells to be turned on, as recited in independent claim 14. As set forth above, it is technically incorrect to consider the odd cell 55 and the even cell 56 disclosed by Kanazawa as sub-cells. Each of the odd and even cells 55, 66 are discharge cells that have only a single X electrode and share a Y electrode. Further, as discussed above, Kanazawa discloses alternatively driving an odd discharge cell 55 during an odd field and an even discharge cell 56 during an even field, and separately driving each odd and even cells. Thus, each of the even cells 55 and odd cells 56 are separate cells each having only one second sustain electrode and receiving a different sustaining discharge pulse.

Thus, Kanazawa does not disclose or suggest all of the features of independent claim 14, or the claimed combination. Masumori fails to overcome the deficiencies of Kanazawa, as it is merely cited for allegedly teaching driving two rows simultaneously.

### **Independent Claim 19**

Kanazawa at least fails to disclose or suggest a plasma display panel, comprising a plurality of second sustain electrodes positioned at each periphery of the discharge cell in a direction crossing the address electrode to receive a second sustaining pulse, as recited in independent claim 19. As set forth above, that it is technically incorrect to consider the odd cell 55 and the even cell 56 disclosed by Kanazawa as sub-cells. Each of the odd and even cells 55, 66 are discharge cells that have only a single X electrode and share a Y electrode. Further, as discussed above, Kanazawa discloses that there are odd discharge cells 55 and separate even discharge cells 56. Within each discharge cell 55, 56, whether it be even or odd, there is only a single, corresponding second sustain electrode.

Thus, Kanazawa does not disclose or suggest all of the features of independent claim 19, or the claimed combination. Masumori fails to overcome the deficiencies of Kanazawa, as it is merely cited for allegedly teaching driving two rows simultaneously.

**Independent Claim 20**

Kanazawa also at least fails to disclose or suggest a display panel, wherein the plurality of the second sustain electrodes is unique to each of the plurality of address electrodes for each discharge cell, as recited in claim 20. As set forth above, that it is technically incorrect to consider the odd cell 55 and the even cell 56 disclosed by Kanazawa as sub-cells. Each of the odd and even cells 55, 66 are discharge cells that have only a single X electrode and share a Y electrode. Further, as discussed above, Kanazawa discloses that there are odd discharge cells 55 and separate even discharge cells 56. Within each discharge cell 55, 56, whether it be even or odd, there is only a single, corresponding second sustain electrode.

Thus, Kanazawa does not disclose or suggest all of the features of independent claim 20, or the claimed combination. Masumori fails to overcome the deficiencies of Kanazawa, as it is merely cited for allegedly teaching driving two rows simultaneously.

**Dependent Claim 23**

Dependent claim 23 recites that there are twice as many second sustain electrodes than the first sustain electrodes. Kanazawa does not disclose or suggest such features.

Accordingly, Kanazawa does not disclose or suggest all of the features of dependent claim 23, or the claimed combination. Masumori fails to overcome the deficiencies of Kanazawa, as it is merely cited for allegedly teaching driving two rows simultaneously.



Accordingly, for the reasons set forth above, the rejection of independent claims 1, 13, 14, 19, and 20, as well as dependent claims 3, 4, 7, 10, and 23, over Kanazawa and Masumori should be reversed. Dependent claims 2, 6, 8-9, and 21-22 are allowable over Kanazawa and Masumori at least for the reasons discussed above with respect to independent claims 1 and 20, from which they respectively depend, as well as for their added features. In view of the above, reversal of the rejection over Kanazawa and Masumori is respectfully requested.

#### **CLAIMS APPENDIX**

The attached Claims Appendix contains a copy of the claims involved in the appeal.

#### **EVIDENCE APPENDIX**

The attached Evidence Appendix contains a copy of a Declaration Under 37 C.F.R. § 1.131 filed with the Request for Reconsideration filed on October 28, 2004.

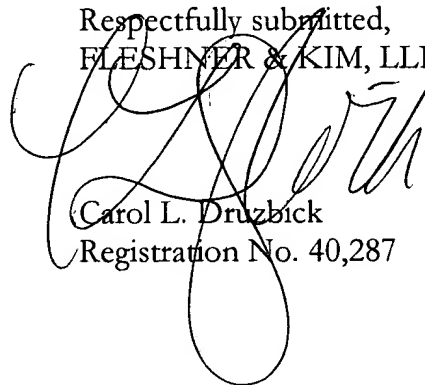
#### **RELATED PROCEEDINGS APPENDIX**

There are no related appeals and interferences, and therefore, Applicants do not include a Related Proceedings Appendix.

**CONCLUSION**

It is respectfully submitted that the above arguments show that each of claims 1-4, 6-10, 13-14, and 19-23 are patentable over the applied references. Based at least on these reasons, it is respectfully submitted that each of claims 1-4, 6-10, 13-14, and 19-23 defines patentable subject matter. Applicant respectfully requests that the rejections of claims 1-4, 6-10, 13-14, and 19-23 set forth in the March 9, 2006 Office Action be reversed.

Respectfully submitted,  
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**Date: September 27, 2006**

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**CLAIMS APPENDIX**

1. A plasma display panel, comprising:  
an address electrode included in each discharge cell making a unit pixel of the plasma display panel;  
a plurality of second sustain electrodes positioned at each periphery of the discharge cell in a direction crossing the address electrode to receive a second sustaining pulse;  
and  
at least one of first sustain electrodes positioned at the center of the discharge cell in a direction crossing the address electrode to receive a first sustaining pulse applied alternately with respect to the second sustaining pulse, wherein the plurality of second sustain electrodes is unique to each of the discharge cells associated with the address electrode.
2. The plasma display panel as claimed in claim 1, wherein the first sustain electrodes are provided between the second sustain electrodes.
3. The plasma display panel as claimed in claim 1, further comprising:  
a bus electrode arranged in parallel to the first sustain electrode at the center of the first sustain electrode.

4. The plasma display panel as claimed in claim 1, further comprising:  
bus electrodes arranged in parallel to the first sustain electrode at each edge of the first sustain electrode.
5. The plasma display panel as claimed in claim 1, further comprising:  
two first sustain electrodes positioned at the center of the discharge cell and provided between the second sustain electrodes.
6. The plasma display panel as claimed in claim 1, further comprising:  
a first barrier rib formed in parallel to the address electrode.
7. The plasma display panel as claimed in claim 6, further comprising:  
a second barrier rib formed in a direction crossing the first barrier rib.
8. The plasma display panel as claimed in claim 7, wherein the second barrier rib is provided at an interface of the discharge cells.
9. The plasma display panel as claimed in claim 1, further comprising:  
a scan/sustain driver connected to the first sustain electrode to apply the scanning pulse and the first sustaining pulse; and

a common sustaining driver connected to the second sustain electrode to apply the second sustaining pulse.

10. The plasma display panel as claimed in claim 1, further comprising:  
a scan/sustain driver connected to the second sustain electrode to apply the scanning pulse and the second sustaining pulse; and  
a common sustaining driver connected to the first sustain electrode to apply a reset pulse and the first sustaining pulse.

11. The plasma display panel as claimed in claim 1, further comprising:  
a dielectric layer formed in such a manner to cover the first and second sustain electrodes; and  
at least two floating electrodes formed in parallel to the first and second sustain electrodes at the rear side of the dielectric layer.

12. The plasma display panel as claimed in claim 11, wherein the floating electrodes are provided under the second sustain electrodes.

13. A method of driving a plasma display panel including a plurality of second sustain electrodes positioned at each periphery of a discharge cell, an address electrode arranged in a

direction crossing the second sustain electrodes, and at least one of first sustain electrodes formed in parallel to the second sustain electrodes between the second sustain electrodes, said method comprising the steps of:

applying a reset pulse to at least one electrode of the first sustain electrodes and the second sustain electrodes so as to initialize the discharge cell, wherein the plurality of second sustain electrode is unique to each of the discharge cells associated with the address electrode;

applying a scanning pulse to the first sustain electrode so as to select the discharge cells to be turned on;

applying a data pulse synchronized with the scanning pulse to the address electrode; and

alternately applying the sustaining pulse to the first and second sustain electrodes so as to discharge the discharge cells to be turned on.

14. A method of driving a plasma display panel including a plurality of second sustain electrodes positioned at each periphery of a discharge cell, an address electrode arranged in a direction crossing the second sustain electrodes, and at least one of first sustain electrodes formed in parallel to the second sustain electrodes between the second sustain electrodes, said method comprising the steps of:

applying a reset pulse to at least one electrode of the first sustain electrode so as to initialize the discharge cell;

applying a scanning pulse to the second sustain electrodes so as to select the discharge cells to be turned on, wherein the plurality of second sustain electrode is unique to each of the discharge cells associated with the address electrode;

applying a data pulse synchronized with the scanning pulse to the address electrode; and

alternately applying the sustaining pulse to the first and second sustain electrodes so as to discharge the discharge cells to be turned on.

18. A plasma display panel, comprising:

an address electrode included in each discharge cell making a unit pixel of the plasma display panel;

a plurality of second sustain electrodes positioned at each periphery of the discharge cell in a direction crossing the address electrode to receive a second sustaining pulse; and

at least one of first sustain electrodes positioned at the center of the discharge cell in a direction crossing the address electrode to receive a first sustaining pulse applied alternately with respect to the second sustaining pulse; and

two first sustain electrodes positioned at the center of the discharge cell and are provided between the second sustain electrodes.

19. A plasma display panel, comprising:
- an address electrode included in each discharge cell making a unit pixel of the plasma display panel;
  - a plurality of second sustain electrodes positioned at each periphery of the discharge cell in a direction crossing the address electrode to receive a second sustaining pulse;
  - at least one of first sustain electrodes positioned at the center of the discharge cell in a direction crossing the address electrode to receive a first sustaining pulse applied alternately with respect to the second sustaining pulse;
  - a scan/sustain driver connected to the second sustain electrode to apply a scanning pulse and the second sustaining pulse; and
  - a common sustaining driver connected to the first sustain electrode to apply a reset pulse and the first sustaining pulse.

20. A display panel, comprising:
- a plurality of first sustain electrodes in a first direction;
  - a plurality of second sustain electrodes in the first direction; and
  - a plurality of address electrodes in a second direction, which is different from the first direction such that the plurality of first and second sustain electrodes cross with the plurality of address electrodes, wherein there are at least more than two second sustain electrodes than the first sustain electrode, wherein a plurality of discharge cells are associated with each of the



plurality of address electrodes, and the plurality of second sustain electrodes is unique to each of the plurality of address electrodes for each discharge cell.

21. The display panel of claim 20, wherein the plurality of first sustain electrodes are scan electrodes.

22. The display panel of claim 20, wherein the plurality of second sustain electrodes are common sustain electrodes.

23. The display panel of claim 20, wherein there are twice as many second sustain electrodes than the first sustain electrodes.

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**EVIDENCE APPENDIX**



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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

Confirmation No.: 3664

Eun Cheol LEE et al.

Group Art Unit: 2674

Serial No.: 09/879,170

Examiner: Xiao M. Wu

Filed: June 13, 2001

Customer No.: 34610

For PLASMA DISPLAY AND DRIVING METHOD THEREOF

DECLARATION UNDER 37 C.F.R. 1.131

U.S. Patent and Trademark Office  
220 20th St. S.  
Customer Window  
Crystal Plaza Two, Lobby, Room 1B03  
Arlington, Virginia 22202

Sir

1. I, Eun Cheol Lee, hereby declare and state as follows:
2. I am a co-inventor of the subject matter disclosed and claimed in U.S. Patent No. 6,504,519 (hereinafter "the Ryu patent"), which is being used to reject claims 1-4, 6-9, and 11-13 of the above-identified application.
3. I suggested the most important concepts of the subject matter disclosed and claimed in the Ryu patent, including the subject matter claimed in independent claims 1, 5, and 12 and the corresponding disclosure.
4. Thus, the inventive concepts disclosed in the Ryu patent and being used to reject claims 1-4, 6-9, and 11-13 of the above-identified application are not an invention "by another."
5. I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under §1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

10/25 / 2004

Date

  
Eun Cheol Lee